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SEA-BASED LOGISTICS: A CONCEPT JUST OVER-THE-HORIZON

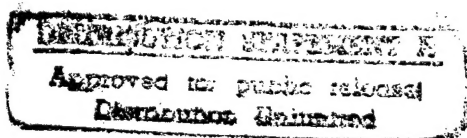
by

Geoffery W. Stokes

Major, USMC

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.



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ABSTRACT

Deployed operating forces are dependent on the accurate determination of logistical requirements, consistent sustainment, and timely distribution of necessary resources within a theater. Specifically within an immature theater, the existing logistical infrastructure is usually poor at best, with little to no host nation support capability available. Consequently, most logistical resources must be brought into theater, contributing to chaotic influences that effect establishing the initial support infrastructure.

As a result, basing logistical resources at sea makes logical sense. The logistical infrastructure for small operations and the initial resources for major operations, could be advanced based or moved into position outside most nation state's seas prior to the arrival of operating forces. Sea-based logistical resources can enhance the immature theater sustainment process, by providing platforms that are self-sustainable, relocatable, and neither dependent on overflight or basing rights, or permission for access. Consequently, sea-based logistics will be able to improve an operational commander's choices early-on, by providing quickly attainable, flexible, and responsive sustainment in support of operational movement and maneuver. Therefore, an expansion of the operational commander's reach within an immature theater and increased sustainability of operational tempo are possible using the sea-based logistics concept.

INTRODUCTION.

Within the framework of operational art, logistics is the most critical function. Deployed operating forces are dependent on the accurate determination of logistical requirements, consistent sustainment, and timely distribution of necessary resources within a theater. Operational logistics, more so than the other functions, dictates which courses of action or lines of operation are doable in a particular theater of operations. Specifically, within an immature theater the existing logistical infrastructure is usually poor at best, with little to no host nation support capability available. Consequently, most logistical resources must be brought into theater, simultaneously competing for strategic lift and finite resources, with the same operating forces they are to support. The resulting chaotic influences that effect establishing the initial logistical support infrastructure, could be minimized by removing the logistical resources ashore and positioning them out to sea.

Basing logistical resources at sea makes logical sense, since 80% of the worlds nations are within the influence of the littoral region, where most of the important conflicts are likely to occur.¹ The logistical infrastructure for small operations and the initial resources for major operations, could be advanced based or moved into position outside most nation state's territorial seas prior to the arrival of operating forces. Sea-based logistical resources can enhance the immature theater sustainment process, by providing *platforms* that are self-sustainable, relocateable, and neither dependent on overflight or basing rights, or permission for access.² Consequently, sea-based logistics will be able to improve an operational commander's choices early-on, by providing quickly attainable, flexible, and responsive sustainment in support of operational movement and maneuver. Therefore, an expansion of the operational

commander's reach within an immature theater and increased sustainability of operational tempo are possible using the sea-based logistics concept.

SUSTAINMENT PROCESS.

To perceive sea-based logistics as an enhancement, able to open up choices, extend reach, and maintain tempo for the operational commander, one must first understand the criticality of operational logistics as a function of operational art. Specifically, that the sustainment process governs military operations and especially within an immature theater. Operational logistics is the link between strategic logistics and tactical combat service support, "...balancing current consumption with the need to build up logistical support for subsequent operations, lengthening lines of communications, and staging logistics support forward to maintain the tempo of operations."³ Since operational logistics exists at the theater level it is inextricably linked to operations, where it can determine what is possible and what is not, on a much broader scope than at the tactical level. Consequently, the relationship difference between logistics and other operational functions, is that logistics can and will govern what is militarily achievable. "Logistics governs what can, and perhaps more importantly, what cannot be accomplished by an operational level commander in a theater of war."⁴ Operational logistics is at once an enabling function for the success of military operations, and a force multiplier that can provide a military force a decisive advantage. Therefore, military operational planners should logistically prepare the theater⁵ at the beginning of the planning process.

Military operational planning will always be influenced by three critical logistical factors; requirements determination, sustainment, and distribution within the theater, "...for a campaign plan that can not be logistically supported is not a plan at all, but simply an expression

of fanciful wishes.”⁶ Consequently, the operational commander must first insure his logistical and operational planners work in concert, planning backwards from the objective, to determine logistical requirements and define the logistics focus of effort. Second, sustainment is “the provision of personnel, logistics and other support required to maintain and prolong operations or combat until successful accomplishment or revision of the mission or the national objective.”⁷ Constant interface between the staff planners is required to insure sufficient sustainment is produced for the operational forces. The third critical factor is the distribution system, which ranges from the continental United States (CONUS) to the forward area of the theater. The distribution capability of the sustainment effort influences the reach of an operational commander, by enabling the consistent delivery of logistical support throughout the operation.

The three critical factors illustrated above, when combined, form the *sustainment process* which is the crux to successful military operations of any duration, especially within an immature theater of operations. Sustainment is the over-arching concept that focuses logistical efforts for the level and duration of operational activity required to achieve campaign or major operation objectives.⁸ The operational commander must realize that operational sustainment is a critical action, within the operational design, for the successful planning and execution of campaigns and major operations. The commander’s overall goal should be to plan for and achieve logistics momentum, to enable military operations to retain the tempo and extend his reach. Specifically, it is the sustainment process that determines the operational reach of, and governs the operational tempo for, the combat forces. However more often than not, it is the lack of operational sustainment which causes an operating force’s culminating point. Therefore, the degree of logistical affect on operational tempo, and subsequently operational momentum, is

dependent on the responsiveness and flexibility of the sustainment process to the operational commander's intent and concept of operations. Consequently, the synchronization of sustainment actions such as resource scheduling, staging, transport, and distribution of supplies to combat forces before they reach the culminating point is important for responsive operational logistics.

IMMATURE THEATER.

The synchronization of operational logistics is difficult within an immature theater which, "...does not have the ability to provide full and comprehensive support to one's own forces and assets...often in such a theater only the rudiments of a theater-wide basing system may exist."⁹ The absence of advanced bases and the non-existence of a viable logistics infrastructure, results in logistical support being deployed, producing subsequent and simultaneous competition with combat forces for available strategic transportation into the theater. Additionally, the lack of a developed infrastructure requires host nation support, which is usually not available in an immature theater, placing greatest demand on U.S. logistics forces and assets.¹⁰ During the 1990s the United States has conducted operations in diverse littoral regions such as the Persian Gulf, Somalia, Haiti, and Bosnia, which were considered immature theaters of operation that had no advanced logistical support bases. Somalia was an excellent example of how the lack of logistics infrastructure available, led to the chaotic misapplication of what facilities did exist. Multiple U.S. government and non-government organizations competed for use of the small transportation hubs, airport and seaport, available within Mogadishu. The planned operational sustainment sequence of events were disrupted by initial service component tactical level decisions. The competing demands for finite facilities among

the myriad of organizations arriving into Somalia, could not be met simultaneously within the austere theater of operations. Consequently, without centralized control of airlift or sealift operations within Somalia, conflicting priorities for delivery of materiel were solved locally, with little regard to or knowledge of the overall operational sustainment plan.¹¹ Through the remainder of this, and early into the 21st century, the operational commander should expect no less in future operations in and around the world's immature theaters.

SEA-BASED LOGISTICS CONCEPT.

Operating within the littoral regions, the sea-based logistics concept can smooth out the initial chaotic affect on the sustainment process, caused by the absence of advanced bases within an immature theater. Sea-based logistics can provide or augment the means available to support operational sustainment in an immature theater of operations. Specifically, the sea-based logistic concept can insure the initial logistics momentum is maintained, by providing floating facilities from which to coordinate and control the synchronization of early sustainment actions. Sequencing 'Just in Time' sustainment events over Lines Of Communication (LOC) from CONUS forward to the sea-based logistics platform, through theater intermediate bases for support of staging and prioritizations, could result in a reduction of land-based resources. The elimination of a large materiel footprint on land, reduces the build-up of logistical personnel necessary to manage it.¹² A smaller land presence reduces the security force size required to protect it from local enemy forces and economic intruders. As a result, fewer combat service support personnel and perhaps subsequently combat forces, may be required to carry out support missions. Additionally, reducing the logistical demands on the inadequate land infrastructure frees the small port or air facilities for priority use by combat forces introduced into theater.

Furthermore, separation from the chaotic influences of, and demands from, land-based non military organizations can be realized during the initial phase of an operation.

The aim of the sea basing concept is to provide tailored and timely logistics support without the inherent vulnerabilities of fixed sites ashore. Creating an efficient 'pull' system of supply from operational resources, rather than swamp tactical units with an inefficient 'push' system.¹³ In this manner the operational commander will be able to project power ashore, without the need to establish a large land based support footprint. By providing floating facilities off-shore to process personnel and materiel, sea-based logistics can be the means necessary within an austere land or maritime environment to assist operating forces achieve the desired end.¹⁴ Consequently, the sea-based logistics goal matches that of the operational commander for the sustainment process, one of insuring combat forces ashore are consistently sustained in a responsive manner, and do not lose the resource capability to project overwhelming combat power. Looking at sea-based logistics using the 'principles of logistics,'¹⁵ will reveal its inherent role toward enhancing the operational commander's choices and expanding his reach within the immature theater.

Responsiveness: The capability to provide the right support, at the right place, at the right time, and is the guiding logistics principle. The ability to forward base or introduce into an austere environment forces and materiel on floating logistical facilities, regardless of theater land restrictions, makes sea-based logistics responsive to the commanders needs. Sea-based logistics used within the littoral region of influence increases the ability to move materials about the theater of operations, and reduces the maneuver forces ties to the sluggish, land based service support area.

Simplicity: The avoidance of complexity through standardized procedures, mission-type orders and establishment of priorities. The usage of task-organized sea-based platforms will bring order to the initial chaos often realized within an austere theater of operations. Standardized operating procedures and facilities should make sea-based logistics a positive benefit in any theater, since successfully managing operational sustainment will require following the planned logistics focus of effort and priority system.

Flexibility: The ability to adapt logistical structures and procedures to changing situations, missions and concept of operations. A moveable sea-based logistics platform will provide any operational commander flexibility in the littorals, by opening up supportable lines of operation available to the maneuver forces that might not be available with land based logistic support. Land based CSS operating from fixed ports or airfields inadvertently 'ties' maneuver forces to the support base's limited operating range. Relocatable sea-based platforms allow an operational commander to change, and avoid overextending, LOCs. Additionally, sea-based platforms could be task-organized to support the current mission or follow-on missions, changing CSS provided to fit the operational situation.

Economy: The provision of support at the least cost, which must be considered when allocating and prioritizing limited resources. Sea-based logistics will help to reduce the initial logistical confusion during operations, avoiding the inefficient build-up of costly supplies and making the sustainment process more precise, by incorporating global resource requisitioning and tracking systems. Duplicate requisitioning and transport of common service materiel brought into theater by each service component, is wasteful of both funds and strategic lift. Operations in Southwest Asia and Somalia illuminated many examples during the early stages of

duplicate supplies ordered by each service that ended up unused and occupied finite space on transportation resources. By providing required common service support from a sea base during the initial build-up phase of a major operation, the operational commander could avoid waste and abuse of finite resources, while his staff establishes coordination and control of service component logistical support.

Attainability: Provides the minimum essential supplies and services required to begin combat operations. Sea-based logistics can provide a ready source of material necessary to enable sustainment of initial operations. A large capacity of common service supplies based offshore minimizes the need to wait for a build-up of supplies through a poor land based infrastructure. Additionally, reducing the initial competition for strategic lift assets between combat and combat service support units, will assist in assuring critical logistical resources are not left standing on the tarmac. Sea-based logistics can bridge the paucity of available materiel within an immature theater, by providing required initial resources prior to operating forces arrival.

Sustainability: Maintains logistic support over the long term. Sea-based logistics can provide supplies not only for the initial period in an operation, but continuity to sustain operations uninterrupted over the long-term. Based at sea removes the logistic operations from constraints and restraints brought about by local political, economical, and environmental concerns. The sustainment process of Receiving, Staging, and Onward movement (RS&O) of cargo can operate unincumbered 24-hours a day, seven days a week when based outside of any sovereign nations territorial waters. Sea-based logistics can augment land based support facilities and extend an operational commanders reach, by moving its floating and self-contained

sustainment process around the theater's littoral area.

Survivability: The capacity of the organization to prevail in the face of potential destruction. The sea-based logistics concept is a defensive measure in of itself, by removing materiel from land and reducing any targets of opportunity of large shore based logistical footprint from any local threat. Sea-based platforms are moveable and will be maintained over-the-horizon. Nevertheless, depending upon geographical placement, platforms will be susceptible to mine, missile, or small boat threats in the littoral region. However, active defensive measures such as mobile small boat security forces, Naval warships, and platform close-in missile defense mechanisms should not be beyond reasonable expectations. Additionally, since the vulnerability of weak LOCs will determine the movement and placement of sea-based logistic platforms, the protection of logistic nodes and LOCs are important.

CURRENT CAPABILITIES.

Currently, sea-based logistics can partially solve the land based resource footprint problem by providing over-the-horizon sustainment operations using a variety of ships. Today's dearth of fast delivery vehicles makes the timely distribution of supplies from ship-to-objective questionable. Additionally the 'war stopper' for sea-based logistics, and a real requirement for sustainment success at sea, is the inability for current logistical platform configurations to handle and process commercially delivered containerized cargo.¹⁶ The forward throughput capability to receive containerized material, break it down at sea into deliverable units of issue, and then quickly distribute the resources ashore to small units, is critical to eliminate the current dependency on a large build-up of resources ashore.

Today's sea-based logistical platforms are a collection of ships and systems that provide good sustainment attainability, but a poor capability to distribute resources ashore.¹⁷ For example, the capability of several logistical ships and systems, such as the Combat Logistics Fleet (CLF), Maritime Preposition Force, and Joint Logistics Over The Shore, have been proven individually in numerous training exercises and contingency operations. Positioned together in an over-the-horizon location, the combined strengths of these ships as sea-based logistical platforms are few:

- 1) Provide a centralized base for control of operational logistics within theater.
- 2) Provide a co-location of logistical planners for efficiency and flexibility.
- 3) Capability currently exists to support MOOTW.

However, more than a few weaknesses become apparent:

- 1) An inability for cross-decking or intership transfer of supplies.
- 2) An inability to receive and process for distribution, follow-on containerized cargo.
- 3) A lack of dedicated fast ship-to-objective delivery vehicles.
- 4) A lack of ground equipment maintenance capabilities.
- 5) An inability to support multi-helicopter operations.
- 6) An inability to receive military transport aircraft.¹⁸

Consequently, a critical weakness for sea-based logistics today is materiel throughput. Once supplies reach the forward sea-based logistic platforms, it is critical to have an efficient delivery means into the combat zone. To eliminate the large materiel footprint ashore and support the concept of 'Just in Time' supply, sea-based logistic platforms must be able to provide efficient throughput to sustain forces operating ashore. The sea-based logistics distribution problem has a requirement for long-range, high speed craft to deliver supplies to the maneuver force, both over surface and air routes. Currently only the Landing Craft Air Cushion (LCAC) supports this mission requirement. While use of helicopters, such as the CH-53, would support the air

movement of cargo, competing tactical requirements from combat forces make the availability of this resource questionable. Future capability rests on the continued procurement and production of the MV-22 Osprey tilt-rotor aircraft, and the Advanced Amphibious Assault Vehicle (AAAV), to augment the LCAC in support of ship-to-objective sustainment.

Imbedded within the concept of reducing the build-up of a large land based logistic footprint is, "the deliberate managed provision of all Combat Service Support to combat forces ashore from ships off-shore."¹⁹ Consequently, providing all CSS from the sea-based logistical platform, negates the need for a large build-up ashore. Therefore, sea-based logistics could eliminate fixed logistic points and perhaps allow numerous small, mobile CSS detachments ashore. While today sea-based logistics could provide all CSS based at sea in a small operation, major operations will require assistance. Small CSS detachments ashore could assist in coordinating and executing throughput of 'Just in Time' supply distribution, without being hindered or tied to fixed supply dumps and fuel farms on the beach, near an airfield, or at a port. Operating with between one to three Days of Supply (DOS) ashore, these small CSS detachments could provide a sustainment buffer for operating forces during periods of bad sea state or no-fly days due to rough weather. Small and mobile by design, the CSS detachments would maneuver with the sea-based logistics platform within the littoral area or be retracted from shore.

Today's throughput capability limitations will require the use of an intermediate staging base within theater for processing commercial cargo ships. The inability to receive and process containerized cargo with the current configuration of ships available to form forward sea-based platforms, requires an intermediate staging base to brake down shipped material into a

distributable form that the forward sea-based logistic platform can handle.²⁰ Cargo would then be moved to the forward sea-base for distribution and delivery to the operating forces on land. Therefore, the sea-based logistic concept must be integrated into the overall sustainment process at the strategic, operational, and tactical levels. An efficient throughput of containerized materiel must be coordinated over the sea LOCs from CONUS, for processing at an intermediate base and then moved on to a forward sea base for distribution ashore.

FUTURE CAPABILITIES.

Future capabilities are very promising for increasing sea-based logistic abilities. Concepts being applied range from converting very large oil tankers into ship platforms, to modular platforms that can be sized differently for large or small operations. Current U.S. Marine Corps development concepts envision a self-propelled mobile offshore base (MOB), that is modular in construction and assembled into sizes tailored to the mission. Modular construction allows for adaptive packaging, presenting an operational commander with "a vast array of force choices, functions, and operations on a floating surface that is neither an island or a ship, yet is large enough to act as a forward operating base or an intermediate support base."²¹ Its regional mobility should permit the timely relocation to an increased threat area. The Naval Surface Warfare Center recently completed sea-and-swell testing on a MOB 60:1 scale model, which allows for a 5,000-foot long runway. The MOB platform tested would be big enough to accommodate C-130 and C-17 transport aircraft, plus commercial shipping.²² Combined with advanced delivery vehicles, such as the AAV, LCAC, and MV-22, the throughput capability for sea-based logistics will be significantly increased. Consequently, the sea-based logistics platform will meet the requirements of a Naval Advanced Logistics Support Site,²³ becoming a

key node within the sustainment process for receipt of containerized cargo, air delivered materiel, resupply of the CLF, and prompt delivery of supplies to operating forces over surface and air routes simultaneously. Additionally as forces maneuver, so to can the operational commander maneuver his sea-based logistics platform within the littoral theater of operations.

STRATEGIC CONCERNS.

Without established advanced bases the operational commander will be routinely faced with the privations of an immature theater of operations during a contingency. Challenged with not only the political problems of establishing operations in foreign nations, the operational commander will be burdened with the logistical build-up required to support operations. The use of sea-based logistics can minimize the strategic risks or costs inherent within regions containing immature theaters. Establishing advance sea-based logistical platforms could assist to curtail uncertainty about U.S. regional commitment, and fear of strategic vacuums should the U.S. continue to withdraw from land bases. A simple fact resulting from the collapse of the bipolar world, is the existence and growth of regional tension. A U.S. presence can be viewed as a positive influence on regional security, with economic competition ongoing in the Pacific rim nations,²⁴ politically immature democracies in Africa, and continued ethnic conflicts in the Middle East, India and Europe. "The U.S. presence provides a stable environment for continued rapid economic development. Fear of radical shifts in the regional power balance leads them to support a continuation of the American presence."²⁵ Economically strong nations might be persuaded to help fund U.S. presence in the form of advanced sea-based logistics platforms, as Japan does now with land based facilities. In regions such as the Pacific, Southwest Asia, Europe, and perhaps in the future Africa, President Clinton has stated that if U.S. military

presence is the acknowledged key to regional security, then we must be willing to either expend more of the defense budget or find other low cost means to project our presence.²⁶ Consequently, “forward presence and forward deployed forces are the key for accomplishment...by locating assets forward, U.S. forces are better situated to react to crisis or presence in support of national interests. Additionally, the geographic advantage includes overcoming the ‘tyranny of distance’ endemic in the vast expanse of the Pacific ocean,”²⁷ or the far away Indian ocean. Sea-based logistics may be the cost effective compromise between having nothing and actually homeporting Naval warships in foreign countries. While locating self-contained MOB platforms in far away regions benefits the presence image and responsiveness, it alleviates the difficult and expensive necessity of obtaining basing rights that include training, logistics, repair, billeting and other shore facilities. Examples of actions that support the advance placement of sea-based logistical platforms in regions of national interest are:

- The operational restrictions and civilian protests in Okinawa, Japan over U.S. Marine Corps aviation operations, have resulted in the planned phasing out of the Futema MCAS and the creation of a sea-based platform for helicopter operations.
- Possible denial of access to facilities in Southeast Asia, which play an important role in supporting U.S. deployments and operations in the Persian Gulf and Indian ocean.
- Cultural, religious, and social structure differences that make it difficult for nations to support or be seen supporting American interests.²⁸

Sea-based platforms will be logistical in nature, which makes it easier politically, as the platforms can be cast in the light of a non-threatening logistical purpose, one of providing a capability for humanitarian assistance or disaster relief within the region.

CONCLUSION.

The absence of advance bases within the immature theater creates a chaotic affect for the sustainment process of military operations. By moving sea-based platforms forward into a theater without access to ports or airfields, deployment of forces and sustainment means become possible. Harnessing the flexibility provided by sea-based logistics operating in the littoral region, military planners will be able to support a smooth transition of forces and materiel into immature theaters. "Operating from highly mobile 'sea bases' in forward areas...free of the political encumbrances that may inhibit and other wise limit the scope of the land based operations in forward theaters."²⁹ The current capabilities of sea-based logistics can bring logistical resources into an environment where none exist, or augment the limited land based infrastructure that is present within an immature theater of operations. Ongoing research and development for sea-based logistics, will enable future platforms that can provide RS&O of commercially delivered forces and material. Nevertheless, the current throughput problems of an inability to process containerized cargo and a lack of high-speed delivery vehicles, will continue to limit sea-based logistics application for the near future. While current capabilities are limited to small operations, future large sea-based platforms will provide the RS&O link for commercially transported material and the ready reserve fleet, plus forward support for the CLF and CSS units during major operations. Therefore, as an enhancement to the sustainment process within an immature theater, sea-based logistics can provide the operational commander with the flexibility to expand his operational reach, while maintaining the responsiveness to sustain the operational tempo and momentum.

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